

# Platform Holly

Reference ID

Origin: California, USA

The sample received contained over 75% water. This led to inconsistent rates of evaporation using the standard rotary evaporation method.

## API Gravity

Evaporation  
(weight %)

11.0 ESD 97

## Equation(s) for Predicting Evaporation

$$\%Ev = (1.09 + 0.045T)\ln(t)$$

Where %Ev = weight percent evaporated; T = surface temperature (°C); t = time (minutes)

ESD 97

## Sulphur (weight %)

Evaporation  
(weight %)

0	1.43	ESD 97
24	1.87	
54	1.98	
78	2.23	

## Water Content

Evaporation  
(weight %)

0	76.0	ESD 97
24	62.0	
54	50.0	
78	26.0	

## Flash Point (°C)

Evaporation  
(weight %)

0	11	ESD 97
24	>95	
54	>95	
78	>95	

## Density (g/mL)

Evaporation  
(weight %)

Temperature  
(°C)

0	0	0.9994		ESD 97
	15	0.9928		
	25	0.9976	(a)	ESD 98
24	0	1.0039		ESD 97
	15	1.0003		
	25	0.9974	(a)	ESD 98
54	0	1.0111		ESD 97
	15	1.0066		
	25	1.0030	(a)	ESD 98
78	0	1.0809		ESD 97
	15	1.0705		
	25	1.0607	(a)	ESD 98

(a) water in sample; unstable density reading

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## Pour Point (°C)

Evaporation  
(weight %)

0	-9	ESD 97
24	12	
54	23	

## Dynamic Viscosity (mPa s or cP)

Evaporation  
(weight %)

Temperature  
(°C)

0	0	18610		ESD 97
	15	3314		
	25	61	(c)	ESD 98
24	0	5979	(a)	ESD 97
		601200	(b)	
	15	4068	(a)	
		150200	(b)	
54	25	483	(c)	ESD 98
	0	NM		ESD 97
	15	399700	(b)	
	25	68870		ESD 98
78	0	NM		ESD 97
	15	304550	(b)	
	25	224900	(b)	ESD 98

Shear rate = (a) 10/s; (b) 1/s

(c) water visible in sample; extremely non-newtonian

## Emulsion Formation

Evaporation  
(weight%)

0	Visual stability	same		ESD 98
	Viscosity (mPa·s)	150000		
	Complex modulus (Pa)	440		
	Water content (wt %)	77		
24	Visual stability	same		
	Viscosity (mPa·s)	360000		
	Complex modulus (Pa)	1600		
	Water content (wt %)	60		
54	Visual stability	same		
	Viscosity (mPa·s)	670000		
	Complex modulus (Pa)	3300		
	Water content (wt %)	49		
78	Visual stability	same		
	Viscosity (mPa·s)	800000		
	Complex modulus (Pa)	3300		
	Water content (wt %)	34		

## Hydrocarbon Groups (weight %)

Evaporation  
(weight %)

0	Saturates	54	(a)	ESD 98
	Aromatics	14	(a)	
	Resins	15	(a)	
	Asphaltenes	17	(a)	
	Waxes	1.6		ESTD 02
24	Saturates	29	(b)	ESD 98
	Aromatics	30	(b)	
	Resins	19	(b)	

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## Hydrocarbon Groups (weight %)

Evaporation

(weight %)

24	Asphaltenes	24	(b)
54	Saturates	36	(c)
	Aromatics	25	(c)
	Resins	17	(c)
	Asphaltenes	22	(c)
78	Saturates	19	(d)
	Aromatics	26	(d)
	Resins	19	(d)
	Asphaltenes	36	(d)

ESD 98

Corrected for water content of (a) 75.73%; (b) 61.66%; (c) 50.09%; (d) 25.50%

## Adhesion (g/m<sup>2</sup>)

Evaporation

(weight %)

0	61	SD = 6
24	564	SD = 85
54	889	SD = 73
78	938	SD = 83

ESD 97

## Volatile Organic Compounds (ppm)

Evaporation

(weight %)

0	Benzene	346
	Toluene	1158
	Ethylbenzene	272
	Xylenes	948
	C3-benzenes	1308
	Total BTEX	2724
	Total VOCs	4031
24	Benzene	0
	Toluene	2
	Ethylbenzene	1
	Xylenes	3
	C3-benzenes	27
	Total BTEX	5
	Total VOCs	32
54	Benzene	0
	Toluene	0
	Ethylbenzene	0
	Xylenes	3
	C3-benzenes	3
	Total BTEX	4
	Total VOCs	7
78	Benzene	0
	Toluene	0
	Ethylbenzene	1
	Xylenes	3
	C3-benzenes	1
	Total BTEX	4
	Total VOCs	5

ESD 97

## Surface Tension (mN/m or dynes/cm)

Evaporation

(weight %)

Temperature

(°C)

0	0	42.8
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ESD 97

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Surface Tension (mN/m or dynes/cm)				Reference ID
Evaporation (weight %)	Temperature (°C)			
0	15	29.1		ESD 97
24	0	NM		
	15	NM		
	25	NM		ESD 98
54	0	NM		ESD 97
	15	NM		
	25	NM		ESD 98
78	0	NM		ESD 97
	15	NM		
	25	NM		ESD 98

Oil/Salt Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	NM		ESD 97
	15	32.0		
24	0	NM		
	15	NM		
	25	NM		ESD 98
54	0	NM		ESD 97
	15	NM		
	25	NM		ESD 98
78	0	NM		ESD 97
	15	NM		
	25	NM		ESD 98

Oil/Fresh Water Interfacial Tension (mN/m or dynes/cm)				
Evaporation (weight %)	Temperature (°C)			
0	0	NM		ESD 97
	15	NM		
24	0	NM		
	15	NM		
	25	NM		ESD 98
54	0	NM		ESD 97
	15	NM		
	25	NM		ESD 98
78	0	NM		ESD 97
	15	NM		
	25	NM		ESD 98

Boiling Point Distribution (BP vs weight %)				
Evaporation (weight %)	Boiling Point (°C)	Weight %		
	40	0.5		ESTD 02
	60	1.7		
	80	2.7		
	100	3.9		
	120	5.2		
	140	6.8		
	160	9		
	180	11.5		
	200	13.8		
	250	20.9		
	300	28.4		

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## Boiling Point Distribution (BP vs weight %)

Evaporation (weight %)	Boiling Point (°C)	Weight %
	350	36.5
	400	44.3
	450	52.8
	500	61.3
	550	69.6
	600	78.7
	650	86.9

ESTD 02